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Comments on the CalFed EIS/EIR
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Senator Johannessen, Chairman of the Senate Select Committee on Cal Fed Water Program, asked that I review the latest CalFed environmental documents to determine how CalFed is using urban water demand data from the California Water Plan, (AKA Bulletin 160). My findings follow.

I have reported in other forums how Bulletin 160 appears to overstate urban water demand in both the base year 1995 and into the future.¹ Subsequent research shows this is a problem not only in Southern California, but in most, but not all, of the top 25 most populous urban areas. This is particularly true for the San Francisco Bay area, but also in parts of the Sacramento-San Joaquin Valley.²

By overstating urban water demand, Bulletin 160 either:

- Overstates current & projected water shortages
- Or, if the current & projected water shortages are correct, it overstates the total supply of water

The CalFed EIS/EIR directly cites Bulletin 160 in nearly 100 places.³ About half are in the Water Use Efficiency Technical Appendix – most of the rest are in the Main EIS/EIR.

The citations in the Water Use Efficiency Technical appendix can be best characterized as comparative references. Often the references show how CalFed assumptions about water conservation are different from Bulletin 160, and the over all thrust is to distance this component of the program from Bulletin 160.

The Main EIS/EIR, however, is different. Just over half of its citations of Bulletin 160 are general references. (For example, in the comment on the previous EIS/EIR, there were many references to comments about how CalFed should or should not tie to Bulletin 160 assumptions). However, the balance of citations are where CalFed explicitly states that it is tying its analysis to Bulletin 160 data.

¹ See Attachment A: Dennis O'Connor, Statement, Presented to the Senate Select Committee on Cal Fed Water Program August 5, 1998

² See Attachment B: Urban Water Demand in the 25 Most Populous Detailed Analysis Units

³ See Attachment C: Bulletin 160 References in the CalFed EIS/EIR & Technical Appendices

CalFed is using Bulletin 160 data in four key ways:

1. 2020 Demands for Delta Exports
2. Least-Cost Planning Simulation Model (LCPSIM).
3. 1995 & 2020 Hydrology
4. Existing conditions analysis

1. 2020 Demands for Delta Exports

CalFed is using Bulletin 160's year 2020 demands as the high end of the range of possible demands for delta exports.⁴ As I have told CalFed staff on a couple of occasions, this approach and use of Bulletin 160 estimates seems quite rational.

2. Least-Cost Planning Simulation Model (LCPSIM).

This analysis "uses a system simulation framework to evaluate the value of imported water."⁵ To do so, the model assumes B160 supplies and demands.⁶

If B160 overstates the shortage, then LCPSIM overstates the economic impact of a drought to urban areas. This in turn would overstate the economic value of additional supplies to urban water users, which could lead CalFed to adopt measures to export more water than is economically justifiable.

However, what if B160 overstates both demands and supplies? Given the cursory overview of the model presented in the EIS/EIR, and the lack of citations to a more detailed explanation of the model and the data, it is not possible to predict how correcting Bulletin 160 data would affect the analysis.

3. Hydrology

The hydrology and upstream depletions for all modeling scenarios are based on DWR Bulletin 160-98 land use projections.

- The 1995-level hydrology is called HYD-D06E.⁷
- The 2020-level hydrology is called HYD-D09C.⁸

⁴ See for example Vol. 301, pp. 1-21 & 5.2-14

⁵ Vol. 301, pp. 7.5-20

⁶ Vol. 301, pp. 7.5-20 & 21, and Section 7.5.15.

⁷ Vol. 301, p. A-14

⁸ Vol. 301, p. A-19

According to CalFed staff, DWR has not written a description of the assumptions for either of these hydrologies.⁹ Again, without a description of the assumptions and the input data, it is not possible to predict how correcting problems with Bulletin 160 would affect CalFed's analysis.

4. Existing Conditions Analysis

While never explicitly stated, it appears that the existing conditions described in EIS/EIR are those described in B160 for 1995.

The problem this causes is one of comparison. If CalFed overstates demands in 1995, and "correctly" describe the demands in 2020, CalFed will understate the gap that needs to be closed. CalFed would also understate the benefits of the program would create, which among other things could cause significant problems of financing the project using a beneficiary pays system.

What Does This Mean For CalFed?

Key assumptions, in the form of input data sets and model specifications are not documented. This is particularly a problem for the hydrology, since most of CalFed's modeling relies on at least some hydrologic assumptions. Unresolved, this could lead to CEQA/NEPA compliance problems.

However, what is more important is that until the Bulletin 160 data are "correct" the modeling that relies on the data is, at best, suspect. As noted in the main EIS/EIR:

Project operations modeling and Delta hydrodynamic modeling rely on the formulation of reasonable assumptions to accurately reflect the consequences of present and future water management decisions. The use of different assumptions may lead to conclusions that overestimate or underestimate the impact or benefits of implementing the various Program elements.¹⁰

The problems Bulletin 160 could cause LCPSIM were discussed above. Other models that are affected are those that rely on the hydrology, including:

⁹ Paul Hutton, personal communication, Sept. 16, 1999

¹⁰ Vol. 301, p. 5.1-19

- DWRSIM¹¹ – which is used to analyze the potential effects of proposed new features, such as additional reservoir storage or Delta export conveyance, as well as any changes to criteria controlling project operations. This model is critical to the alternatives analysis.¹²
- DSM2¹³ – simulates the channel flows, tidal effects, and water quality of the Bay-Delta estuary. This model is also critical to the alternatives analysis.¹⁴
- EWA “gaming” – which is an attempt to provide flexibility in achieving environmental benefits while reducing uncertainties associated with environmental water requirements. While not explicitly stated in the EIS/EIR, these “games” rely heavily upon assumptions about hydrology.

Finally, it is also quite likely that a benefits-based financing system would rely on some measure of expected benefits – benefits calculated from model output.

What Should CalFed Do?

1. Much more clearly document its assumptions and how they are used – if such documentation is not readily available, then CalFed should reported it in another appendix.
2. Publicly evaluate the hydrologic assumptions as they relate to Bulletin 160. The hydrologies are so critical to CalFed’s analysis they deserve special attention.
3. Resolve base year conditions. Bulletin 160’s 1995 demand estimates are clearly suspect. CalFed should either work with DWR to revise the Bulletin 160 estimates, or CalFed should develop its own.
4. Deal consistently with Bulletin 160’s 2020 urban demand projections. CalFed cannot use one set of demand assumptions for LCPSIM, for example, and another for DWRSIM, and expect to get comparable and consistent results.

¹¹ See vol. 301, p5.1-24 & Table 5.1-2

¹² Vol. 301, p. 5.1-18

¹³ See vol. 301, p5.1-24 & Table 5.1-2

¹⁴ Vol. 301, p. 5.1-18